



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT

February 18, 1998

Lauren Fondahl
Region 9 Biosolids Coordinator
U.S. Environmental Protection Agency
75 Hawthorne Street, WTR-7
San Francisco, CA 94105-3901

RE: 1997 Annual Sewage Sludge Report, 40 CFR Part 503

Dear Ms. Fondahl,

Enclosed please find the City of Oceanside annual report for sewage sludge for 1997 as required by 40 CFR Part 503.

The City has two wastewater treatment plants. Both San Luis Rey and La Salina Wastewater Treatment Plants (WWTP) are Class I sludge treatment facilities. Waste Management of North County, an Oceanside company, hauled all dewatered sludge from both plants to various agricultural areas within Riverside and San Diego County. During periods of heavy rain and when one plant experienced high levels of nickel, the dewatered sludge was hauled to Arizona for composting. Wheelabrator Water Technologies Bio Gro Division, a company that does land application and composting of treated sludge, has a contract with the City of Oceanside for handling all of the land application or disposal of sewage sludge. A total of 2190 dry metric tons were applied or composted during 1997.

This report covers the treatment information and quantity of sewage sludge from both treatment plants. The pollutant levels, pathogen reduction, and vector attraction reduction data are enclosed.

The San Luis Rey WWTP complied at all times during 1997 with the pollutant limits of Table 1 and 3 of §503.13 and with the pathogen reduction requirements for Class B. During four months of the year the plant failed to achieve a minimum of 38% volatile solids reduction as required by §503.33 (b) (1) for vector attraction reduction due to digester capacity. Arrangements were made with the land applier to incorporate the biosolids into the ground within 6 hours most of the time. This satisfied §503.33 (b) (10) for vector attraction reduction. Additional digester capacity will be available within a few months.

February 18, 1998

The La Salina WWTP complied with all §503 requirements except for a two month period with nickel levels above the limits of Table 1 and 3 of §503.13. The levels dropped after an industrial metal plating facility was determined to be at fault and discontinued discharge to the sewer. During that period the biosolids were hauled to Arizona and composted with clean material. The City of Oceanside Industrial Waste Inspector continues to monitor this industrial discharger to maintain compliance with pretreatment requirements.

Please call (760) 966-8795 if you need additional information or have any questions concerning this report.

Sincerely,



Guss Pennell
Environmental Regulatory Compliance Officer

Enclosures (2)

GHP/ghp

cc: San Diego Regional Water Quality Control
Heidi Marks, Wheelabrator Water Technologies Bio Gro division

**City of Oceanside
SEWAGE SLUDGE ANNUAL REPORT - 1997**

Date: February 16, 1998

Name of Generator: City of Oceanside Water Utilities Department

Location: San Luis Rey Wastewater Treatment Plant
3950 North River Road
Oceanside, California 92054

Mailing Address: City of Oceanside
Water Utilities Department
300 North Coast Highway
Oceanside, California 92054-2885

Contact Person: Guss Pennell, Environmental Regulatory Compliance Officer

Telephone: 760-966-8795

Flow MGD (average): 8.9 MGD (1997 Effluent average)

Plant Description: The San Luis Rey Wastewater Treatment Plant (WWTP) is an activated sludge treatment facility that has a design capacity of 10.7 MGD. It is a Class I sludge management facility with an approved pretreatment program.

Sludge Treatment Process: This treatment facility has three anaerobic digesters with two in operation at this time. Each digester has a capacity of 630,000 gallons. Primary clarifier sludge is pumped into one of two anaerobic digesters that are mixed and heated. Waste activated sludge is thickened in a dissolved air floatation unit and pumped into the digesters. Normal operation at this facility would consist of two heated and mixed primary digesters with a secondary digester that is not heated or mixed. Digested sludge from the secondary unit would be dewatered and land applied.

On January 29, 1997, a notice to proceed on repair of digester #2 was issued to replace the floating cover with a fixed cover and change the gas mixing to pump mixing. The digester was to be cleaned and the interior coating replaced. This project should be complete by mid-1998. Completion of this project will improve the operation of the sludge system and increase the volatile solids reduction capability.

The treated sludge is injected with hydrogen peroxide for odor control prior to dewatering with two 2.2-meter filter belt presses. The dewatered sludge (16.6% Total Solids Annual Average) is loaded into 30 cubic yard end dump trailers and trucked to western Riverside County (1259.1 Dry Metric Tons) or Otay Mesa in San Diego County (388.3 Dry Metric Tons) for direct land application to agricultural fields by Wheelabrator Water Technologies Inc. Some dewatered

**CITY OF OCEANSIDE
SEWAGE SLUDGE ANNUAL REPORT - 1997**

Location: San Luis Rey Wastewater Treatment Plant – Continued:

sludge was trucked to Arizona (44.2 Dry metric Tons) to be included in a composting operation during wet periods when land application was discontinued.

The land application is according to the EPA's protocol for Class B biosolids. The sludge was incorporated into the ground within 24 hours according to Riverside County Ordinance #696. All 1997 hauling was done under contract with Waste Management of North County.

Total Sludge Generated in 1997: 1691.6 Dry Metric Tons

Sludge Delivered to Wheelabrator Bio Gro: 1647.4 Dry Metric Tons

Address of Land Application Facility: Wheelabrator Water Technologies
Bio Gro Division
18500 Von Karman Avenue, Ste. 900
Irvine, California 92612
714-476-4080

Sludge Delivered to Arizona Composting Facility: 44.2 Dry Metric Tons

Address of Next Preparer: Arizona Soils Composting Facility (*)
P.O. Box 670
McVey Road & Highway 60
Salome, Arizona 85348
520-859-4130

* - Owned and operated by Wheelabrator Water Technologies Technologies Bio Gro Division.

City of Oceanside
SEWAGE SLUDGE ANNUAL REPORT - 1997

Location: San Luis Rey Wastewater Treatment Plant – Continued:

Pollutant Concentrations (Metals): January to December 1997, analyzed monthly but reported as bimonthly averages on Notice and Necessary Information (NANI) certifications. These are attached.

The data below is taken from the monthly data sheets. Metals are expressed as Total and Units are mg/kg Dry Weight. All values are within Table 3 Limits.

§503.13 Pollutants	Table 3 Limits	Jan.	Feb.	March	April	May	June
Arsenic	41	<14	<12	<13	<15	<16	<16
Cadmium	39	5.63	4.96	6.88	5.86	4.83	5.09
Chromium	No Std.	34.3	29.1	31.7	32.0	33.8	29.1
Copper	1500	363	309	294	317	313	348
Lead	300	34.8	31.5	32.6	36.7	42.8	40.1
Mercury	17	1.80	1.65	1.63	1.86	1.86	1.54
Molybdenum	*	75	24.3	15.0	15.0	19.5	21.5
Nickel	420	47.6	35.4	48.0	37.9	33.1	38.8
Selenium	100	<16	<14	<15	19	<18	<18
Zinc	2800	761	600	648	661	723	766
% T.S.	No Std.	16.4	19.0	18.3	15.5	14.6	14.9

§503.13 Pollutants	Table 3 Limits	July	Aug.	Sept.	Oct.	Nov.	Dec.
Arsenic	41	<14	<15	<14	<14	<14	<14
Cadmium	39	4.88	5.18	5.92	4.92	5.46	6.71
Chromium	No Std.	27.7	35.3	36.2	31.4	31.3	33.7
Copper	1500	364	395	420	402	430	418
Lead	300	29.7	36.8	35.2	31.6	36.6	31.8
Mercury	17	2.11	2.26	1.86	1.62	1.96	1.96
Molybdenum	*	75	22.1	23.9	27.0	21.4	27.2
Nickel	420	32.8	30.6	32.4	30.8	60.0	45.0
Selenium	100	<16	<17	20	<16	18	20
Zinc	2800	737	813	837	704	817	843
% T.S.	No Std.	17.0	15.9	16.9	17.2	16.7	16.8

- 75 – Molybdenum Limit from Table 1.

**City of Oceanside
SEWAGE SLUDGE ANNUAL REPORT - 1997**

Location: San Luis Rey Wastewater Treatment Plant – Continued:

Pathogen Reduction: Class B requirements for direct land application in 503.32 (b) (2) Alternative 1 were met by the San Luis Rey WWTP for six bimonthly monitoring periods for January through December 1997. See attached Notice and Necessary Information (NANI) Certificates with the supporting laboratory report.

Vector Attraction reduction: The vector attraction reduction requirements in 503.33 (b) (1) or Option 1 were met by the San Luis Rey WWTP for the bimonthly monitoring periods for January through April and September through December 1997. The 38% reduction in volatile solids requirement was not achieved during the rest of the year. See attached NANI Certificates.

One of the three anaerobic digesters was down for repairs during most of 1997. This created a situation where the available hydraulic capacity limited the detention time within the digesters. The volatile solids reduction was close (May 37.4%, June 36.9%, July 33.8%, and August 33.9%) to the requirements. The plant would monitor the values daily and send Wheelabrator the results weekly. The third digester should be back online within the next few months.

Wheelabrator incorporates the sludge into the soil within 24 hours as required by Riverside County Ordinance #696. Their usual practice is to incorporate the sludge within six hours. This would satisfy the vector attraction reduction option 503.33 (b) (10) but they cannot certify that this happened 100% of the time. Wheelabrator is immediately notified if our wastewater treatment plant experiences a problem and the reduction is going to be less than 38% for several days. Wheelabrator will incorporate the sludge within six hours thereby satisfying option 503.33 (b) (10) until our conditions improve.

NOTICE AND NECESSARY INFORMATION (NANI)

This form is to assist compliance with the bulk sewage sludge (biosolids) notification requirements [503.12(f)]. Please note, however, that if the biosolids meet the exceptional quality criteria, then the notification requirements do not apply. This form can be used by preparers of biosolids to transmit information to land applicators and also by land applicators to transmit information to land owners or lease holders.

Facility and Biosolids Type: San Luis Rey WWTP Dewatered Digested Sludge
Monitoring Period: From 01 / 01 / 97 To 02 / 28 / 97

To be Completed by PREPARERS of Biosolids

A. Please provide pollutant concentrations

Name	Concentration (mg/kg) Dry Weight	Pollutant Concentrations (Table 3, 40 CFR 503.13) (monthly average)	Ceiling Concentrations* (Table 1, 40 CFR 503.13) (daily maximum)
Arsenic	< 13 mg/kg	41 mg/kg	75 mg/kg
Cadmium	5.3 mg/kg	39 mg/kg	85 mg/kg
Chromium	32 mg/kg	No Limit	No Limit
Copper	336 mg/kg	1500 mg/kg	4300 mg/kg
Lead	33 mg/kg	300 mg/kg	840 mg/kg
Mercury	1.7 mg/kg	17 mg/kg	57 mg/kg
Molybdenum	20 mg/kg	N/A**	75 mg/kg
Nickel	42 mg/kg	420 mg/kg	420 mg/kg
Selenium	< 15 mg/kg	100 mg/kg	100 mg/kg
Zinc	681 mg/kg	2800 mg/kg	7500 mg/kg
Nitrogen Concentration	Not Tested	N/A	N/A

* Biosolids may not be land applied if any pollutant exceeds these values.

** EPA has temporarily removed molybdenum limits from Table 3, Table 2 and Table 4.

B. Pathogen Reduction (40 CFR 503.32) -- Please indicate the level achieved

Class A Class B – 40 CFR 503.32 (b) (2) Alternative 1.

C. Vector Attraction Reduction (40 CFR 503.33) -- Please indicate the option performed

<input checked="" type="checkbox"/> Option I	<input type="checkbox"/> Option 2	<input type="checkbox"/> Option 3	<input type="checkbox"/> Option 4
<input type="checkbox"/> Option 5	<input type="checkbox"/> Option 6	<input type="checkbox"/> Option 7	<input type="checkbox"/> Option 8
<input type="checkbox"/> No vector attraction reduction options were performed			

D. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or these persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name and Official Title (<i>type or print</i>)	Guss Pennell, Environmental Regulatory Compliance Officer	B. Area Code and Telephone Number
		760-966-8795 & 760-966-4874 (FAX)
C. Signature	D. Date Signed	
		May 5, 1997



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

LABORATORY REPORT

Sample: sludge cake -- total solids = 16.4 %

Identification: San Luis Rey WWTP
12 discrete samples composited in lab

Samples received: 02-January-97

Analysis performed by: City of Oceanside
Water Utilities Department Laboratory

Date reported: May 2, 1997

Analyte	Method	Concentration (mg/kg) Dry weight	Pollutant concentration (monthly ave)	Ceiling concentration (daily max)
Arsenic	6010	ND <14	41 mg/kg	75 mg/kg
Cadmium	6010	5.63	39 mg/kg	85 mg/kg
Chromium	6010	34.3	1200 mg/kg	3000 mg/kg
Copper	6010	363	1500 mg/kg	4300 mg/kg
Lead	6010	34.8	300 mg/kg	840 mg/kg
Mercury	7471	1.80	17 mg/kg	57 mg/kg
Molybdenum	6010	24.3		75 mg/kg
Nickel	6010	47.6	420 mg/kg	420 mg/kg
Selenium	6010	ND <16	36 mg/kg	100 mg/kg
Zinc	6010	761	2800 mg/kg	7500 mg/kg

Method: EPA SW846, Test Methods for Evaluating Solid Wastes,
third edition.

WATER UTILITIES DEPARTMENT LABORATORY, by:

Mary Gonzales
Mary Gonzales
Laboratory Supervisor



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

LABORATORY REPORT

Sample: sludge cake -- total solids = 19.0 %

Identification: San Luis Rey WWTP
12 discrete samples composited in lab

Samples received: 10-February-97

Analysis performed by: City of Oceanside
Water Utilities Department Laboratory

Date reported: March 24, 1997

Analyte	Method	Concentration (mg/kg) Dry weight	Pollutant concentration (monthly ave)	Ceiling concentration (daily max)
Arsenic	6010	ND <12	41 mg/kg	75 mg/kg
Cadmium	6010	4.96	39 mg/kg	85 mg/kg
Chromium	6010	29.1	1200 mg/kg	3000 mg/kg
Copper	6010	309	1500 mg/kg	4300 mg/kg
Lead	6010	31.5	300 mg/kg	840 mg/kg
Mercury	7471	1.65	17 mg/kg	57 mg/kg
Molybdenum	6010	15.0		75 mg/kg
Nickel	6010	35.4	420 mg/kg	420 mg/kg
Selenium	6010	ND <14	36 mg/kg	100 mg/kg
Zinc	6010	600	2800 mg/kg	7500 mg/kg

Method: EPA SW846, Test Methods for Evaluating Solid Wastes,
third edition.

WATER UTILITIES DEPARTMENT LABORATORY, by:

Mary Gonzales
Mary Gonzales
Laboratory Supervisor



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

QA/QC SUMMARY

Sample: SLR & LS sludge samples, January 1997

Analysis performed by: Water Utilities Department Laboratory

Date reported: May 2, 1997

Recovery and replicate data

Date	Parameter	Spike Recovery	Acceptable Range (%)	Percent Difference	Acceptable Range (%)
09-Jan-97	Arsenic	93	70-130	4.6	30
09-Jan-97	Cadmium	93	70-130	4.4	30
09-Jan-97	Chromium	94	70-130	7.8	30
09-Jan-97	Copper	98	70-130	0.6	30
10-Jan-97	Lead	102	70-130	9.8	30
07-Jan-97	Mercury	94	70-130	8.8	30
09-Jan-97	Molybdenum	90	70-130	5.4	30
09-Jan-97	Nickel	101	70-130	7.6	30
10-Jan-97	Selenium	101	70-130	7.7	30
10-Jan-97	Zinc	99	70-130	1.0	30

External reference standards

Date	Parameter	True Value	Reported Value	Acceptable Range
09-Jan-97	Arsenic	2.50	2.55	2.38-2.62
09-Jan-97	Cadmium	0.500	0.492	.475-.525
09-Jan-97	Chromium	1.00	0.997	.950-1.05
09-Jan-97	Copper	1.00	1.01	.950-1.05
10-Jan-97	Lead	1.00	1.02	.950-1.05
07-Jan-97	Mercury	3.00	3.06	2.34-3.68
09-Jan-97	Molybdenum	1.00	0.994	.950-1.05
09-Jan-97	Nickel	1.00	1.04	.950-1.05
10-Jan-97	Selenium	2.50	2.56	2.38-2.62
10-Jan-97	Zinc	1.00	1.01	.950-1.05

Method: EPA SW846, Test Methods for Evaluating Solid Wastes, third edition.



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

QA/QC SUMMARY

Sample: SLR & LS sludge samples, February 1997

Analysis performed by: Water Utilities Department Laboratory

Date reported: March 24, 1997

Recovery and replicate data

Date	Parameter	Spike Recovery	Acceptable Range (%)	Relative Percent Difference	Acceptable Range (%)
27-Feb-97	Arsenic	94	70-130	4.9	30
27-Feb-97	Cadmium	97	70-130	9.3	30
27-Feb-97	Chromium	98	70-130	0.0	30
27-Feb-97	Copper	99	70-130	3.6	30
28-Feb-97	Lead	100	70-130	14.0	30
21-Feb-97	Mercury	91	70-130	20.9	30
27-Feb-97	Molybdenum	93	70-130	10.9	30
28-Feb-97	Nickel	99	70-130	0.9	30
28-Feb-97	Selenium	98	70-130	0.6	30
28-Feb-97	Zinc	103	70-130	4.5	30

External reference standards

Date	Parameter	True Value	Reported Value	Acceptable Range
27-Feb-97	Arsenic	2.50	2.50	2.38-2.62
27-Feb-97	Cadmium	0.500	0.514	.475-.525
27-Feb-97	Chromium	1.00	1.02	.950-1.05
27-Feb-97	Copper	1.00	0.997	.950-1.05
28-Feb-97	Lead	1.00	1.03	.950-1.05
21-Feb-97	Mercury	3.00	2.98	2.34-3.68
27-Feb-97	Molybdenum	1.00	1.02	.950-1.05
28-Feb-97	Nickel	1.00	1.04	.950-1.05
28-Feb-97	Selenium	2.50	2.60	2.38-2.62
28-Feb-97	Zinc	1.00	1.03	.950-1.05

Method: EPA SW846, Test Methods for Evaluating Solid Wastes, third edition.

TREATED SEWAGE SLUDGE MONITORING

TYPE OF MONITORING: BACTERIOLOGICAL
 SAMPLING FREQUENCY: BIMONTHLY

DATE REPORTED: FEBRUARY 27, 1997

REQUIREMENT FOR CLASS B ALTERNATIVE I: DENSITY OF FECAL COLIFORM FROM SEVEN SAMPLES OF TREATED SEWAGE SLUDGE MUST NOT EXCEED 2 MILLION PER GRAM OF SEWAGE SLUDGE SOLIDS.

SAMPLE LOCATION	SAMPLE	# FECAL COLIFORM	% TS	# FECAL COLIFORM	LOG	SAMPLER	DATE	TIME	DIG. #
		PER 100 ML	/GM TS						
SAN LUIS REY	1	80000	16.4	4878	3.6882	SMITH	02-JAN-97	0030-0630	2
	2	300000	17.3	17341	4.2391	MACIAS	08-JAN-97	0000-0600	2
PRESS CAKE	3	50000	15.7	3185	3.5031	SILLER	15-JAN-97	0000-0400	2
	4	50000	17.3	2890	3.4609	SILLER	29-JAN-97	0000-0400	2
	5	500000	17.8	28090	4.4486	SILLER	12-FEB-97	0000-0400	1
	6	50000	18.5	2703	3.4318	SILLER	19-FEB-97	0000-0400	3
	7	240000	17.6	13636	4.1347	SILLER	26-FEB-97	0000-0400	3

LOG MEAN = 3.8438

GEOMETRIC MEAN = ANTILOG (3.8438) = 6979.1

MEETS CLASS B ALTERNATIVE I STANDARDS: YES

COMMENTS: NONE

METHOD: FECAL COLIFORM - DIRECT TEST BY MOST PROBABLE NUMBER (MPN), STND. MTHDS., 18TH ED., 9221 E.2
 %T.S. - STND. MTHDS., 17TH ED., 2540 B.

REPORT BY: M.L. PAPPAGIANIS

APPROVED BY: *Mary Gonzalez*

XC: SAN LUIS REY WWTP, WATER UTILITIES ADMIN/G. PENNELL

SAN LUIS REY WASTEWATER TREATMENT PLANT - JANUARY 1997

REQUIREMENTS FOR VECTOR ATTRACTION REDUCTION - 503.33(b)(1) - OPTION 1
REDUCTION IN VOLATILE SOLIDS CONTENT - AT LEAST 38% REDUCTION REQUIRED

MONTH	RAW %TS	SLUDGE %VS	FLOW	DAF %TS	SLUDGE %VS	FLOW	DIGESTER FEED %VS	PRESS FEED %VS	VOL. SOLIDS REDUCTION %
1									
2	4.15	79.7	48816	2.64	80.8	42300	80.1	67.4	48.6
3	3.02	78.1	47530	3.86	77.9	41700	78.0	67.2	42.2
4									
5									
6	5.53	79.6	37364	4.64	78.7	34600	79.2	67.7	45.0
7	3.72	81.0	50220	4.45	78.8	35200	80.0	66.7	49.9
8	5.63	79.7	42113	4.77	77.6	40500	78.8	67.7	43.5
9	4.20	79.2	44323	4.46	77.8	30500	78.6	68.2	41.6
10	5.40	79.5	44718	4.49	78.2	49600	78.9	72.5	29.4
11									
12									
13	4.59	79.3	42935	3.22	77.6	63600	78.4	65.0	48.9
14	4.82	75.6	40186	3.30	79.6	59100	77.6	66.3	43.2
15	4.42	77.5	40945	5.13	76.3	35600	76.9	67.5	37.6
16	4.64	75.6	40262	4.84	76.1	24300	75.8	67.9	32.4
17	4.90	75.4	46326	5.40	70.9	23400	73.8	66.6	29.2
18									
19									
20	4.98	78.8	43109	3.93	77.1	29300	78.2	70.6	33.1
21	4.72	77.2	26778	4.65	76.4	32500	76.8	66.7	39.4
22	4.44	78.5	31839	5.10	75.8	48300	76.8	67.5	37.2
23	4.57	77.7	33396	5.29	76.0	28600	76.9	67.8	36.6
24	4.55	77.4	25967	5.57	75.8	15900	76.7	67.0	38.4
25									
26									
27	4.75	65.6	29314	5.09	72.7	50500	70.2	65.0	21.2
28	6.98	53.4	14447	5.27	70.7	38700	65.0	64.9	DATA NOT
29	7.24	58.9	27244	3.78	72.0	39100	64.5	64.4	USED FOR
30	6.89	57.2	33930	4.83	67.9	32100	61.5	62.5	AVERAGING
31	6.54	58.8	31644	4.50	64.0	25300	60.6	64.2	SEE BELOW
AVG.	5.03	73.8	37428	4.51	75.4	37305	74.6	66.9	39.0

On January 31, 1997 the Collections crew discovered a line break on a 15" clay pipe that carried raw sewage to the San Luis Rey WWTP. Large amounts of sand entered the wastewater plant through this broken line. Note the reduction in volatile solids in the raw sludge between January 24 and January 31. The influx of sand into the raw sludge prevents an accurate measurement of volatile solids reduction within the digesters. The sand did not leave the digesters until well into February 1997. The digesters were running well before and after the line break. This data was not used in the monthly calculation. Wheelabrator BioGro was notified so that they could till the sludge into the soil within six hours.

SAN LUIS REY WASTEWATER TREATMENT PLANT - FEBRUARY 1997

REQUIREMENTS FOR VECTOR ATTRACTION REDUCTION - 503.33(b)(1) - OPTION 1
REDUCTION IN VOLATILE SOLIDS CONTENT - AT LEAST 38% REDUCTION REQUIRED

NOTICE AND NECESSARY INFORMATION (NANI)

This form is to assist compliance with the bulk sewage sludge (biosolids) notification requirements [503.12(j)]. Please note, however, that if the biosolids meet the exceptional quality criteria, then the notification requirements do not apply. This form can be used by preparers of biosolids to transmit information to land applicators and also by land applicators to transmit information to land owners or lease holders.

Facility and Biosolids Type: San Luis Rey WWTP Dewatered Digested Sludge
 Monitoring Period: From 03/01/97 To 04/30/97

To be Completed by PREPARERS of Biosolids

A. Please provide pollutant concentrations

Name	Concentration (mg/kg) Dry Weight	Pollutant Concentrations (Table 3, 40 CFR 503.13) (monthly average)	Ceiling Concentrations* (Table 1, 40 CFR 503.13) (daily maximum)
Arsenic	< 14 mg/kg	41 mg/kg	75 mg/kg
Cadmium	6.4 mg/kg	39 mg/kg	85 mg/kg
Chromium	32 mg/kg	No Limit	No Limit
Copper	306 mg/kg	1500 mg/kg	4300 mg/kg
Lead	35 mg/kg	300 mg/kg	840 mg/kg
Mercury	1.7 mg/kg	17 mg/kg	57 mg/kg
Molybdenum	17 mg/kg	N/A**	75 mg/kg
Nickel	43 mg/kg	420 mg/kg	420 mg/kg
Selenium	17 mg/kg	100 mg/kg	100 mg/kg
Zinc	655 mg/kg	2800 mg/kg	7500 mg/kg
Nitrogen Concentration	Not Tested	N/A	N/A

* Biosolids may not be land applied if any pollutant exceeds these values.

** EPA has temporarily removed molybdenum limits from Table 3, Table 2 and Table 4.

B. Pathogen Reduction (40 CFR 503.32) -- Please indicate the level achieved

Class A Class B – 40 CFR 503.32 (b) (2) Alternative 1.

C. Vector Attraction Reduction (40 CFR 503.33) -- Please indicate the option performed

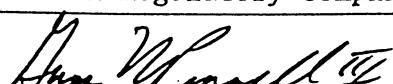
Option I Option 2 Option 3 Option 4

Option 5 Option 6 Option 7 Option 8

No vector attraction reduction options were performed

D. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or these persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name and Official Title (type or print)	Guss Pennell, Environmental Regulatory Compliance Officer	B. Area Code and Telephone Number	760-966-8795 & 760-966-4874 (FAX)
C. Signature			
	D. Date Signed		
	May 12, 1997		



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

LABORATORY REPORT

Sample: sludge cake -- total solids = 18.3%

Identification: San Luis Rey WWTP
12 discrete samples composited in lab

Samples received: 05-Mar-97

Analysis performed by: City of Oceanside
Water Utilities Department Laboratory

Date reported: April 18, 1997

Analyte	Method	Concentration (mg/kg) Dry weight	Pollutant concentration (monthly ave)	Ceiling concentration (daily max)
Arsenic	6010	ND <13	41 mg/kg	75 mg/kg
Cadmium	6010	6.88	39 mg/kg	85 mg/kg
Chromium	6010	31.7	1200 mg/kg	3000 mg/kg
Copper	6010	294	1500 mg/kg	4300 mg/kg
Lead	6010	32.6	300 mg/kg	840 mg/kg
Mercury	7471	1.63	17 mg/kg	57 mg/kg
Molybdenum	6010	15.0		75 mg/kg
Nickel	6010	48.0	420 mg/kg	420 mg/kg
Selenium	6010	ND <15	36 mg/kg	100 mg/kg
Zinc	6010	648	2800 mg/kg	7500 mg/kg

Method: EPA SW846, Test Methods for Evaluating Solid Wastes, third edition.

WATER UTILITIES DEPARTMENT LABORATORY, by:

Mary Gonzales
Mary Gonzales
Laboratory Supervisor



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

LABORATORY REPORT

Sample: sludge cake -- total solids = 15.5%

Identification: San Luis Rey WWTP
12 discrete samples composited in lab

Samples received: 07-Apr-97

Analysis performed by: City of Oceanside
Water Utilities Department Laboratory

Date reported: May 2, 1997

Analyte	Method	Concentration (mg/kg) Dry weight	Pollutant concentration (monthly ave)	Ceiling concentration (daily max)
Arsenic	6010	ND <15	41 mg/kg	75 mg/kg
Cadmium	6010	5.86	39 mg/kg	85 mg/kg
Chromium	6010	32.0	1200 mg/kg	3000 mg/kg
Copper	6010	317	1500 mg/kg	4300 mg/kg
Lead	6010	36.7	300 mg/kg	840 mg/kg
Mercury	7471	1.86	17 mg/kg	57 mg/kg
Molybdenum	6010	19.5		75 mg/kg
Nickel	6010	37.9	420 mg/kg	420 mg/kg
Selenium	6010	19	36 mg/kg	100 mg/kg
Zinc	6010	661	2800 mg/kg	7500 mg/kg

Method: EPA SW846, Test Methods for Evaluating Solid Wastes, third edition.

WATER UTILITIES DEPARTMENT LABORATORY, by:

Mary Gonzales
Mary Gonzales
Laboratory Supervisor



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

QA/QC SUMMARY

Sample: SLR & LS sludge samples, March 1997

Analysis performed by: Water Utilities Department Laboratory

Date reported: April 18, 1997

Recovery and replicate data

Date	Parameter	Spike Recovery	Acceptable Range (%)	Relative Difference	Acceptable Range (%)
18-Mar-97	Arsenic	97	70-130	4.2	30
18-Mar-97	Cadmium	96	70-130	4.0	30
18-Mar-97	Chromium	99	70-130	2.4	30
18-Mar-97	Copper	99	70-130	1.9	30
20-Mar-97	Lead	112	70-130	10.7	30
07-Mar-97	Mercury	99	70-130	15.3	30
18-Mar-97	Molybdenum	94	70-130	2.6	30
20-Mar-97	Nickel	100	70-130	1.8	30
20-Mar-97	Selenium	104	70-130	3.0	30
20-Mar-97	Zinc	113	70-130	0.2	30

External reference standards

Date	Parameter	True Value	Reported Value	Acceptable Range
18-Mar-97	Arsenic	2.50	2.50	2.38-2.62
18-Mar-97	Cadmium	0.500	0.524	.475-.525
18-Mar-97	Chromium	1.00	1.04	.950-1.05
18-Mar-97	Copper	1.00	1.01	.950-1.05
20-Mar-97	Lead	1.00	1.04	.950-1.05
07-Mar-97	Mercury	3.00	2.92	2.34-3.68
18-Mar-97	Molybdenum	1.00	1.04	.950-1.05
20-Mar-97	Nickel	1.00	1.04	.950-1.05
20-Mar-97	Selenium	2.50	2.52	2.38-2.62
20-Mar-97	Zinc	1.00	1.04	.950-1.05

Method: EPA SW846, Test Methods for Evaluating Solid Wastes, third edition.



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

QA/QC SUMMARY

Sample: SLR & LS sludge samples, April 1997

Analysis performed by: Water Utilities Department Laboratory

Date reported: May 2, 1997

Recovery and replicate data

Date	Parameter	Spike Recovery	Acceptable Range (%)	Relative Difference	Acceptable Range (%)
16-Apr-97	Arsenic	97	70-130	5.0	30
16-Apr-97	Cadmium	94	70-130	3.1	30
16-Apr-97	Chromium	97	70-130	5.0	30
16-Apr-97	Copper	91	70-130	1.0	30
18-Apr-97	Lead	102	70-130	9.5	30
18-Apr-97	Mercury	92	70-130	15.1	30
16-Apr-97	Molybdenum	94	70-130	1.0	30
16-Apr-97	Nickel	96	70-130	3.7	30
18-Apr-97	Selenium	101	70-130	1.1	30
18-Apr-97	Zinc	116	70-130	3.5	30

External reference standards

Date	Parameter	True Value	Reported Value	Acceptable Range
16-Apr-97	Arsenic	2.50	2.58	2.38-2.62
16-Apr-97	Cadmium	0.500	0.510	.475-.525
16-Apr-97	Chromium	1.00	1.04	.950-1.05
16-Apr-97	Copper	1.00	1.03	.950-1.05
18-Apr-97	Lead	1.00	1.03	.950-1.05
18-Apr-97	Mercury	3.00	2.96	2.34-3.68
16-Apr-97	Molybdenum	1.00	1.03	.950-1.05
16-Apr-97	Nickel	1.00	1.05	.950-1.05
18-Apr-97	Selenium	2.50	2.62	2.38-2.62
18-Apr-97	Zinc	1.00	1.04	.950-1.05

Method: EPA SW846, Test Methods for Evaluating Solid Wastes, third edition.

TREATED SEWAGE SLUDGE MONITORING

TYPE OF MONITORING: BACTERIOLOGICAL
 SAMPLING FREQUENCY: BIMONTHLY

Date reported: May 2, 1997

REQUIREMENT FOR CLASS B ALTERNATIVE I: DENSITY OF FECAL COLIFORM FROM SEVEN SAMPLES OF TREATED SEWAGE SLUDGE MUST NOT EXCEED 2 MILLION PER GRAM OF SEWAGE SLUDGE SOLIDS.

SAMPLE LOCATION	SAMPLE	# FECAL COLIFORM PER 100 ML	% TS	# FECAL COLIFORM /GM TS	LOG	SAMPLER	DATE	TIME	DIG. #
SAN LUIS REY	1	1700000	18.3	92896	4.9680	SILLER	03-MAR-97	0000-0400	1
	2	2400000	18.2	131868	5.1201	SILLER	11-MAR-97	0000-0400	1
PRESS CAKE	3	2400000	16.3	147239	5.1680	SILLER	19-MAR-97	0000-0400	1
	4	500000	16.1	31056	4.4921	SILLER	26-MAR-97	0000-0400	3
	5	500000	15.9	31447	4.4976	SILLER	01-02-APR-97	2300-0300	1
	6	1300000	16.3	79755	4.9018	SILLER	08-09-APR-97	2300-0300	3
	7	500000	16.6	30120	4.4789	SILLER	16-APR-97	0000-0400	1

LOG MEAN = 4.8038

GEOMETRIC MEAN = ANTILOG (4.8038) = 63650.2

MEETS CLASS B ALTERNATIVE I STANDARDS: YES

COMMENTS: NONE

METHOD: FECAL COLIFORM - DIRECT TEST BY MOST PROBABLE NUMBER (MPN), STND. MTHDS, 18TH ED., 9221 E.2
 XT.S. - STND. MTHDS., 17TH ED., 2540 B.

REPORT BY: M.L. PAPPAGIANIS

APPROVED BY: *Mary Gangalee*

XC: SAN LUIS REY WWTP, WATER UTILITIES ADMIN/G. PENNELL

SAN LUIS REY WASTEWATER TREATMENT PLANT - MARCH 1997

REQUIREMENTS FOR VECTOR ATTRACTION REDUCTION - 503.33 (b) (1) - OPTION 1
REDUCTION IN VOLATILE SOLIDS CONTENT - AT LEAST 38% REDUCTION REQUIRED

MONT	RAW SLUDGE			DAF SLUDGE			DIGESTER	PRESS	VOL. SOLIDS REDUCTION
	%TS	%VS	FLOW	%TS	%VS	FLOW	FEED %VS	FEED %VS	
1									
2									
3	4.53	75.9	22682	4.26	73.2	40500	74.2	61.2	45.2
4	5.13	76.5	30321	3.13	75.8	29700	76.2	63.6	45.4
5	5.12	77.2	28074	4.06	72.5	36500	74.8	63.8	40.7
6	5.06	77.3	24708	4.42	72.9	35400	74.9	63.0	42.8
7	5.00	77.9	31941	4.63	72.1	27200	75.3	63.0	44.3
8									
9									
10	5.14	76.5	24069	4.61	71.9	32200	74.0	63.0	40.1
11	4.90	78.0	48099	4.17	75.7	31600	77.2	64.1	47.2
12	4.92	76.8	12695	4.42	75.8	36100	76.1	64.6	42.6
13	5.22	77.5	28946	3.48	75.6	30800	76.7	57.9	58.2
14	4.85	78.9	26056	4.88	73.7	26000	76.3	64.4	43.8
15									
16									
17	4.56	77.3	36684	4.62	77.4	36800	77.4	65.5	44.4
18	4.50	78.9	34987	7.43	76.5	19100	77.8	65.2	46.4
19	4.37	79.5	32461	4.15	76.5	29800	78.1	65.9	45.8
20	4.51	78.7	36941	4.50	75.0	35700	76.9	65.3	43.4
21	4.02	79.3	28068	3.43	78.8	30800	79.1	66.7	46.9
22									
23									
24	4.24	78.3	33157	3.96	79.4	43000	78.9	67.7	44.0
25	5.00	78.3	35231	4.50	78.3	34000	78.3	66.1	46.0
26	4.87	78.9	27881	4.05	81.3	37700	80.2	67.4	48.9
27	4.94	79.7	27097	4.12	81.5	24000	80.5	65.1	54.7
28	4.74	80.7	40734	4.26	76.6	30900	79.0	67.5	44.9
29									
30									
31	3.95	79.2	26608	4.54	82.2	39600	81.1	70.4	44.5
AVG	4.74	78.2	30354	4.36	76.3	32733	77.3	64.8	45.8

SAN LUIS REY WASTEWATER TREATMENT PLANT - APRIL 1997

REQUIREMENTS FOR VECTOR ATTRACTION REDUCTION - 503.33 (b) (1) - OPTION 1
REDUCTION IN VOLATILE SOLIDS CONTENT - AT LEAST 38% REDUCTION REQUIRED

MONT	RAW SLUDGE			DAF SLUDGE			DIGESTER FEED %VS	PRESS FEED %VS	VOL. SOLIDS REDUCTION
	%TS	%VS	FLOW	%TS	%VS	FLOW			
1	3.87	79.2	28389	4.00	83.6	32200	81.6	67.9	52.2
2	5.28	79.7	22080	4.40	81.9	25400	80.8	67.6	50.3
3	5.21	80.0	25167	4.52	80.8	32200	80.4	69.1	45.6
4	5.02	79.5	31153	4.56	78.5	32500	79.0	69.2	40.3
5									
6									
7	3.81	79.2	28471	3.40	82.8	37600	81.1	67.6	51.5
8	3.94	78.9	29478	3.33	85.4	42100	82.5	68.5	53.7
9	5.87	79.7	27853	3.52	80.8	35300	80.2	68.2	47.0
10	4.04	80.0	27874	3.73	81.7	42700	81.0	70.8	43.1
11	4.29	78.7	34937	3.13	81.2	31500	79.7	68.6	44.3
12									
13									
14	5.18	81.5	31410	4.20	80.4	28000	81.0	70.0	45.4
15	4.32	79.8	25614	4.72	81.6	29700	80.8	71.4	40.7
16	4.52	80.3	13694	3.98	81.9	33200	81.4	70.1	46.4
17	4.16	80.8	21989	4.01	79.8	37300	80.2	69.7	43.1
18	3.87	80.6	36228	3.34	77.9	30900	79.5	68.1	44.8
19									
20									
21	2.83	80.3	15952	3.88	80.6	30000	80.5	68.0	48.6
22	5.39	80.7	35657	3.91	82.8	21900	81.3	69.1	48.7
23	2.51	77.9	43464	3.91	81.4	31400	79.8	70.1	40.5
24	5.70	80.5	43239	3.92	79.6	35300	80.2	70.3	41.5
25	3.64	79.9	41457	4.16	81.5	35668	80.7	69.4	45.7
26									
27									
28	3.62	80.9	31992	4.10	76.6	31400	78.6	70.6	34.8
29	3.67	80.0	46625	3.67	75.5	33000	78.1	72.0	28.0
30	3.36	79.4	31192	4.39	74.8	42700	76.4	71.0	24.6
Avg	4.28	79.9	30633	3.94	80.5	33271	80.2	69.4	44.0

AVERAGE % VOLATILE SOLIDS REDUCTION FOR MARCH AND APRIL 1997 = 44.9

NOTICE AND NECESSARY INFORMATION (NANI)

This form is to assist compliance with the bulk sewage sludge (biosolids) notification requirements [503.12(f)]. Please note, however, that if the biosolids meet the exceptional quality criteria, then the notification requirements do not apply. This form can be used by preparers of biosolids to transmit information to land applicators and also by land applicators to transmit information to land owners or lease holders.

Facility and Biosolids Type: San Luis Rey WWTP Dewatered Digested Sludge
 Monitoring Period: From 05 / 01 / 97 To 06 / 30 / 97

To be Completed by PREPARERS of Biosolids

A. Please provide pollutant concentrations

Name	Concentration (mg/kg) Dry Weight	Pollutant Concentrations (Table 3, 40 CFR 503.13) (monthly average)	Ceiling Concentrations* (Table 1, 40 CFR 503.13) (daily maximum)
Arsenic	< 16 mg/kg	41 mg/kg	75 mg/kg
Cadmium	5.0 mg/kg	39 mg/kg	85 mg/kg
Chromium	31 mg/kg	No Limit	No Limit
Copper	330 mg/kg	1500 mg/kg	4300 mg/kg
Lead	41 mg/kg	300 mg/kg	840 mg/kg
Mercury	1.7 mg/kg	17 mg/kg	57 mg/kg
Molybdenum	21 mg/kg	N/A **	75 mg/kg
Nickel	36 mg/kg	420 mg/kg	420 mg/kg
Selenium	< 18 mg/kg	100 mg/kg	100 mg/kg
Zinc	744 mg/kg	2800 mg/kg	7500 mg/kg
Nitrogen Concentration	Not Tested	N/A	N/A

* Biosolids may not be land applied if any pollutant exceeds these values.

** EPA has temporarily removed molybdenum limits from Table 3, Table2 and Table 4.

B. Pathogen Reduction (40 CFR 503.32) -- Please indicate the level achieved

Class A Class B – 40 CFR 503.32 (b) (2) Alternative 1.

C. Vector Attraction Reduction (40 CFR 503.33) -- Please indicate the option performed Option 1 requirement of

<input checked="" type="checkbox"/> Option I	<input type="checkbox"/> Option 2	<input type="checkbox"/> Option 3	<input type="checkbox"/> Option 4
<input type="checkbox"/> Option 5	<input type="checkbox"/> Option 6	<input type="checkbox"/> Option 7	<input type="checkbox"/> Option 8
at least 38% reduction was not achieved. The two month average (May 37.4 – June 36.9) was 37.2%.			

No vector attraction reduction options were performed

D. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or these persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name and Official Title (<i>type or print</i>)	Guss Pennell, Environmental Regulatory Compliance Officer	B. Area Code and Telephone Number	760-966-8795 & 760-966-4874 (FAX)
C. Signature			
	D. Date Signed		
	August 14, 1997		



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

LABORATORY REPORT

Sample: sludge cake -- total solids = 14.6%

Identification: San Luis Rey WWTP
12 discrete samples composited in lab

Samples received: 01-May-97

Analysis performed by: City of Oceanside
Water Utilities Department Laboratory

Date reported: June 2, 1997

Analyte	Method	Concentration (mg/kg) Dry weight	Pollutant concentration - (monthly ave)	Ceiling concentration (daily max)
Arsenic	6010	ND <16	41 mg/kg	75 mg/kg
Cadmium	6010	4.83	39 mg/kg	85 mg/kg
Chromium	6010	33.8	No limit	No limit
Copper	6010	313	1500 mg/kg	4300 mg/kg
Lead	6010	42.8	300 mg/kg	840 mg/kg
Mercury	7471	1.86	17 mg/kg	57 mg/kg
Molybdenum	6010	21.5		75 mg/kg
Nickel	6010	33.1	420 mg/kg	420 mg/kg
Selenium	6010	ND <18	100 mg/kg	100 mg/kg
Zinc	6010	723	2800 mg/kg	7500 mg/kg

Method: EPA SW846, Test Methods for Evaluating Solid Wastes,
third edition.

WATER UTILITIES DEPARTMENT LABORATORY, by:

Mary Gonzales
Laboratory Supervisor



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

LABORATORY REPORT

Sample: sludge cake -- total solids = 14.9%

Identification: San Luis Rey WWTP
12 discrete samples composited in lab

Samples received: 02-Jun-97

Analysis performed by: City of Oceanside
Water Utilities Department Laboratory

Date reported: June 13, 1997

Analyte	Method	Concentration (mg/kg) Dry weight	Pollutant concentration (monthly ave)	Ceiling concentration (daily max)
Arsenic	6010	ND <16	41 mg/kg	75 mg/kg
Cadmium	6010	5.09	39 mg/kg	85 mg/kg
Chromium	6010	29.1	No limit	No limit
Copper	6010	348	1500 mg/kg	4300 mg/kg
Lead	6010	40.1	300 mg/kg	840 mg/kg
Mercury	7471	1.54	17 mg/kg	57 mg/kg
Molybdenum	6010	19.8		75 mg/kg
Nickel	6010	38.8	420 mg/kg	420 mg/kg
Selenium	6010	ND <18	100 mg/kg	100 mg/kg
Zinc	6010	766	2800 mg/kg	7500 mg/kg

Method: EPA SW846, Test Methods for Evaluating Solid Wastes, third edition.

WATER UTILITIES DEPARTMENT LABORATORY, by:

Mary Gonzales
Laboratory Supervisor



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

QA/QC SUMMARY

Sample: SLR & LS sludge samples, May 1997

Analysis performed by: Water Utilities Department Laboratory

Date reported: June 2, 1997

Recovery and replicate data

Date	Parameter	Spike Recovery	Acceptable Range (%)	Relative Percent Difference	Acceptable Range (%)
09-May-97	Arsenic	100	70-130	-0.3	30
13-May-97	Cadmium	99	70-130	0.2	30
09-May-97	Chromium	101	70-130	3.5	30
13-May-97	Copper	94	70-130	28.0	30
09-May-97	Lead	107	70-130	1.0	30
07-May-97	Mercury	87	70-130	19	30
09-May-97	Molybdenum	99	70-130	1.3	30
09-May-97	Nickel	101	70-130	9.7	30
09-May-97	Selenium	101	70-130	3.9	30
13-May-97	Zinc	99	70-130	3.9	30

External reference standards

Date	Parameter	True Value	Reported Value	Acceptable Range
09-May-97	Arsenic	2.50	2.47	2.38-2.62
13-May-97	Cadmium	0.500	0.510	.475-.525
09-May-97	Chromium	1.00	1.02	.950-1.05
13-May-97	Copper	1.00	1.03	.950-1.05
09-May-97	Lead	1.00	1.02	.950-1.05
07-May-97	Mercury	3.00	2.76	2.34-3.68
09-May-97	Molybdenum	1.00	1.01	.950-1.05
09-May-97	Nickel	1.00	1.00	.950-1.05
09-May-97	Selenium	2.50	2.52	2.38-2.62
13-May-97	Zinc	1.00	1.03	.950-1.05

Method: EPA SW846, Test Methods for Evaluating Solid Wastes, third edition.



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

QA/QC SUMMARY

Sample: SLR & LS sludge samples, June 2, 1997

Analysis performed by: Water Utilities Department Laboratory

Date reported: June 13, 1997

Recovery and replicate data

Date	Parameter	Spike	Acceptable	Percent	Acceptable
		Recovery	Range (%)	Difference	Range (%)
04-Jun-97	Arsenic	101	70-130	5.0	30
04-Jun-97	Cadmium	101	70-130	1.3	30
04-Jun-97	Chromium	103	70-130	0.8	30
04-Jun-97	Copper	105	70-130	0.3	30
09-Jun-97	Lead	109	70-130	8.1	30
03-Jun-97	Mercury	82	70-130	24.4	30
04-Jun-97	Molybdenum	101	70-130	0.2	30
04-Jun-97	Nickel	96	70-130	0.7	30
09-Jun-97	Selenium	111	70-130	3.3	30
09-Jun-97	Zinc	127	70-130	0.7	30

External reference standards

Date	Parameter	True Value	Reported Value	Acceptable Range
04-Jun-97	Arsenic	2.50	2.60	2.38-2.62
04-Jun-97	Cadmium	0.500	0.512	.475-.525
04-Jun-97	Chromium	1.00	1.05	.950-1.05
04-Jun-97	Copper	1.00	1.03	.950-1.05
09-Jun-97	Lead	1.00	1.03	.950-1.05
03-Jun-97	Mercury	3.00	2.98	2.34-3.68
04-Jun-97	Molybdenum	1.00	1.03	.950-1.05
04-Jun-97	Nickel	1.00	1.04	.950-1.05
09-Jun-97	Selenium	2.50	2.56	2.38-2.62
09-Jun-97	Zinc	1.00	1.03	.950-1.05

Method: EPA SW846, Test Methods for Evaluating Solid Wastes, third edition.

TREATED SEWAGE SLUDGE MONITORING

TYPE OF MONITORING: BACTERIOLOGICAL
 SAMPLING FREQUENCY: BIMONTHLY

Date reported: JUNE 26, 1997

REQUIREMENT FOR CLASS B ALTERNATIVE I: DENSITY OF FECAL COLIFORM FROM SEVEN SAMPLES OF TREATED SEWAGE SLUDGE MUST NOT EXCEED 2 MILLION PER GRAM OF SEWAGE SLUDGE SOLIDS.

SAMPLE LOCATION	SAMPLE	# FECAL COLIFORM	% TS	# FECAL COLIFORM	LOG	SAMPLER	DATE	TIME	DIG. #
		PER 100 ML	/GM TS						
SAN LUIS REY	1	800000	16.4	48780	4.6882	SILLER	07-MAY-97	0000-0400	1
	2	3000000	16.3	184049	5.2649	SILLER	15-MAY-97	0000-0400	1
PRESS CAKE	3	800000	16.4	48780	4.6882	GONZALES	20-MAY-97	1600-2000	1
	4	2400000	15.2	157895	5.1984	SILLER	04-JUN-97	0000-0400	1&3
	5	800000	16.7	47904	4.6804	SILLER	11-JUN-97	0000-0400	3
	6	300000	16.7	17964	4.2544	SILLER	18-JUN-97	0000-0400	1
	7	300000	16.7	17964	4.2544	SILLER	25-JUN-97	0000-0400	1

LOG MEAN = 4.7184
 GEOMETRIC MEAN = ANTILOG (4.7184) = 52287.8
 MEETS CLASS B ALTERNATIVE I STANDARDS: YES

COMMENTS: NONE

METHOD: FECAL COLIFORM - DIRECT TEST BY MOST PROBABLE NUMBER (MPN), STND. MTHDS., 18TH ED., 9221 E.2
 %T.S. - STND. MTHDS., 17TH ED., 2540 B.

REPORT BY: M.L. PAPPAGIANIS

APPROVED BY: *Mary Gonzales*

XC: SAN LUIS REY WWTP, WATER UTILITIES ADMIN/G. PENNELL

SAN LUIS REY WASTEWATER TREATMENT PLANT - MAY 1997

REQUIREMENTS FOR VECTOR ATTRACTION REDUCTION - 503.33 (b) (1) - OPTION 1
REDUCTION IN VOLATILE SOLIDS CONTENT - AT LEAST 38% REDUCTION REQUIRED

MONTH	RAW SLUDGE			DAF SLUDGE			DIGESTER FEED %VS	PRESS FEED %VS	VOL. SOLIDS REDUCTION
	%TS	%VS	FLOW	%TS	%VS	FLOW			
1	3.57	79	48955	3.38	76	40400	77.7	70	33.0
2	3.40	79	50461	2.47	72	33100	76.7	72	22.1
3									
4									
5	4.52	79	38347	3.83	78	36000	78.6	72	29.8
6	3.56	80	35948	4.03	79	35900	79.5	70	39.7
7	3.71	79	42058	4.47	79	41000	79.0	71	34.9
8	3.94	79	32904	4.16	77	50000	77.8	71	30.0
9	3.96	78	38347				78.0	64	49.9
10									
11									
12	3.66	80	30556				80.0	69	44.4
13	3.82	81	40100	4.12	79	27600	80.1	69	44.9
14	6.32	81	40106	3.14	81	37600	81.0	71	42.6
15	6.45	80	37326	3.14	81	45000	80.4	72	37.2
16	3.64	81	30724	3.37	80	37400	80.5	70	43.4
17									
18									
19	3.99	80	43823	4.21	79	35300	79.5	70	40.0
20	4.34	78	17716	4.00	79	41200	78.7	70	36.8
21	4.34	80	15680	4.18	80	40300	80.0	69	44.4
22	5.02	77	22480	4.31	78	30500	77.5	70	32.4
23	5.18	79	8918	4.19	77	39700	77.4	70	32.0
24									
25									
26									
27	4.42	79	4441	4.23	78	38800	78.1	70	34.6
28	4.62	79	12783	3.80	80	34900	79.7	70	40.5
29	5.16	78	26369	3.71	79	47400	78.6	70	36.3
30	4.70	81	32073	4.08	78	53600	79.2	73	29.1
31									
AVG	4.40	79.4	30958	3.83	78.4	39247	79.0	70.1	37.4

SAN LUIS REY WASTEWATER TREATMENT PLANT - JUNE 1997

REQUIREMENTS FOR VECTOR ATTRACTION REDUCTION - 503.33 (b) (1) - OPTION 1
REDUCTION IN VOLATILE SOLIDS CONTENT - AT LEAST 38% REDUCTION REQUIRED

MONTH	RAW SLUDGE			DAF SLUDGE			DIGESTER FEED %VS	PRESS FEED %VS	VOL. SOLIDS REDUCTION
	%TS	%VS	FLOW	%TS	%VS	FLOW			
1									
2	2.72	79.0	22304	4.37	79.1	31000	79.1	70.8	35.8
3	2.99	80.2	31438	4.14	79.8	11400	80.1	71.0	39.0
4	4.40	81.1	36267	3.94	77.9	52900	79.3	69.0	41.9
5	4.72	80.2	49947	3.71	78.6	40800	79.6	70.5	38.7
6	4.37	82.0	29353	3.67	78.2	20900	80.6	70.0	43.8
7									
8									
9	1.80	80.3	14059	3.87	79.2	34400	79.4	69.7	40.2
10	4.29	80.6	39071	3.94	77.6	33700	79.3	69.2	41.3
11	4.05	79.2	12993	3.79	78.3	30000	78.6	70.6	34.6
12	4.19	80.4	30792	3.81	78.6	31400	79.5	71.1	36.7
13	4.09	79.8	43599	4.03	73.8	35900	77.1	68.4	35.8
14									
15									
16	4.38	80.1	22217	4.43	76.5	36500	77.9	69.1	36.4
17	3.27	79.4	40848	2.80	78.2	24000	79.0	69.7	38.8
18	5.32	80.1	18168	3.51	76.0	22400	78.3	70.0	35.2
19	6.21	80.6	17005	4.60	78.9	31800	79.6	68.9	43.3
20	4.46	80.0	12809	4.81	74.7	35400	76.0	67.6	34.2
21									
22									
23	4.05	79.5	24081	4.56	75.3	24300	77.3	70.0	31.3
24	1.96	77.5	23221	3.71	80.2	38398	79.5	72.0	33.9
25	5.84	80.0	15300	4.79	74.8	28700	76.8	70.0	29.7
26	3.75	78.9	34511	3.14	78.8	32400	78.9	66.7	46.3
27	4.08	78.8	31081	5.29	76.4	29000	77.5	71.6	26.7
28									
29									
30	1.98	81.8	28796	4.85	75.8	25900	77.7	71.2	28.9
AVG	3.95	80.0	27517	4.08	77.5	31009	78.6	69.9	36.9

AVERAGE % VOLATILE SOLIDS REDUCTION FOR MAY AND JUNE 1997 = 37.2

NOTICE AND NECESSARY INFORMATION (NANI)

This form is to assist compliance with the bulk sewage sludge (biosolids) notification requirements [503.12(j)]. Please note, however, that if the biosolids meet the exceptional quality criteria, then the notification requirements do not apply. This form can be used by preparers of biosolids to transmit information to land applicators and also by land applicators to transmit information to land owners or lease holders.

Facility and Biosolids Type: San Luis Rey WWTP Dewatered Digested Sludge
Monitoring Period: From 07/01/97 To 08/30/97

To be Completed by PREPARERS of Biosolids

A. Please provide pollutant concentrations

Name	Concentration (mg/kg) Dry Weight	Pollutant Concentrations (Table 3, 40 CFR 503.13) (monthly average)	Ceiling Concentrations* (Table 1, 40 CFR 503.13) (daily maximum)
Arsenic	<15 mg/kg	41 mg/kg	75 mg/kg
Cadmium	5.0 mg/kg	39 mg/kg	85 mg/kg
Chromium	32 mg/kg	No Limit	No Limit
Copper	380 mg/kg	1500 mg/kg	4300 mg/kg
Lead	33 mg/kg	300 mg/kg	840 mg/kg
Mercury	2.2 mg/kg	17 mg/kg	57 mg/kg
Molybdenum	23 mg/kg	N/A**	75 mg/kg
Nickel	32 mg/kg	420 mg/kg	420 mg/kg
Selenium	<17 mg/kg	100 mg/kg	100 mg/kg
Zinc	775 mg/kg	2800 mg/kg	7500 mg/kg
Nitrogen Concentration	Not Tested	N/A	N/A

* Biosolids may not be land applied if any pollutant exceeds these values.

** EPA has temporarily removed molybdenum limits from Table 3, Table 2 and Table 4.

B. Pathogen Reduction (40 CFR 503.32) -- Please indicate the level achieved

Class A Class B – 40 CFR 503.32 (b) (2) Alternative 1.

C. Vector Attraction Reduction (40 CFR 503.33) -- Please indicate the option performed **Option 1 requirement of at least 38% reduction was not achieved.**

<input checked="" type="checkbox"/> Option I	<input type="checkbox"/> Option 2	<input type="checkbox"/> Option 3	<input type="checkbox"/> Option 4
<input type="checkbox"/> Option 5	<input type="checkbox"/> Option 6	<input type="checkbox"/> Option 7	<input type="checkbox"/> Option 8
<input type="checkbox"/> No vector attraction reduction options were performed			

The two month average (July 33.8% – August 33.9%) was 33.9%.

D. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or these persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name and Official Title (<i>type or print</i>)	Guss Pennell, Environmental Regulatory Compliance Officer	B. Area Code and Telephone Number
		760-966-8795 & 760-966-4874 (FAX)
C. Signature	D. Date Signed	
	October 21, 1997	



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

LABORATORY REPORT

Sample: sludge cake -- total solids = 17.0%

Identification: San Luis Rey WWTP
12 discrete samples composited in lab

Samples received: 01-Jul-97

Analysis performed by: City of Oceanside
Water Utilities Department Laboratory

Date reported: August 21, 1997

Analyte	Method	Concentration (mg/kg) Dry weight	Pollutant concentration (monthly ave)	Ceiling concentration (daily max)
Arsenic	6010	ND <14	41 mg/kg	75 mg/kg
Cadmium	6010	4.88	39 mg/kg	85 mg/kg
Chromium	6010	27.7	No limit	No limit
Copper	6010	364	1500 mg/kg	4300 mg/kg
Lead	6010	29.7	300 mg/kg	840 mg/kg
Mercury	7471	2.11	17 mg/kg	57 mg/kg
Molybdenum	6010	22.1		75 mg/kg
Nickel	6010	32.8	420 mg/kg	420 mg/kg
Selenium	6010	ND <16	100 mg/kg	100 mg/kg
Zinc	6010	737	2800 mg/kg	7500 mg/kg

Method: EPA SW846, Test Methods for Evaluating Solid Wastes,
third edition.

WATER UTILITIES DEPARTMENT LABORATORY, by:

Mary Gonzales
Laboratory Supervisor



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

LABORATORY REPORT

Sample: sludge cake -- total solids = 15.9%

Identification: San Luis Rey WWTP
12 discrete samples composited in lab

Samples received: 05/06-Aug-97

Analysis performed by: City of Oceanside
Water Utilities Department Laboratory

Date reported: August 21, 1997

Analyte	Method	Concentration (mg/kg) Dry weight	Pollutant concentration (monthly ave)	Ceiling concentration (daily max)
Arsenic	6010	ND <15	41 mg/kg	75 mg/kg
Cadmium	6010	5.18	39 mg/kg	85 mg/kg
Chromium	6010	35.3	No limit	No limit
Copper	6010	395	1500 mg/kg	4300 mg/kg
Lead	6010	36.8	300 mg/kg	840 mg/kg
Mercury	7471	2.26	17 mg/kg	57 mg/kg
Molybdenum	6010	23.9		75 mg/kg
Nickel	6010	30.6	420 mg/kg	420 mg/kg
Selenium	6010	ND <17	100 mg/kg	100 mg/kg
Zinc	6010	813	2800 mg/kg	7500 mg/kg

Method: EPA SW846, Test Methods for Evaluating Solid Wastes,
third edition.

WATER UTILITIES DEPARTMENT LABORATORY, by:

Mary Gonzales
Laboratory Supervisor



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

QA/QC SUMMARY

Sample: SLR & LS sludge samples, July 1997

Analysis performed by: Water Utilities Department Laboratory

Date reported: August 21, 1997

Recovery and replicate data

Date	Parameter	Spike	Acceptable	Relative	Acceptable
		Recovery	Range (%)	Percent Difference	Range (%)
15-Jul-97	Arsenic	101	70-130	1.6	30
15-Jul-97	Cadmium	100	70-130	0.4	30
15-Jul-97	Chromium	98	70-130	4.7	30
15-Jul-97	Copper	105	70-130	1.4	30
16-Jul-97	Lead	106	70-130	14.6	30
17-Jul-97	Mercury	102	70-130	4.0	30
15-Jul-97	Molybdenum	97	70-130	10.2	30
15-Jul-97	Nickel	105	70-130	0.3	30
16-Jul-97	Selenium	103	70-130	2.9	30
16-Jul-97	Zinc	110	70-130	2.4	30

External reference standards

Date	Parameter	True Value	Reported Value	Acceptable Range
15-Jul-97	Arsenic	2.50	2.50	2.38-2.62
15-Jul-97	Cadmium	0.500	0.523	.475-.525
15-Jul-97	Chromium	1.00	1.01	.950-1.05
15-Jul-97	Copper	1.00	1.01	.950-1.05
16-Jul-97	Lead	1.00	1.03	.950-1.05
17-Jul-97	Mercury	3.00	2.97	2.34-3.68
15-Jul-97	Molybdenum	1.00	1.02	.950-1.05
15-Jul-97	Nickel	1.00	1.02	.950-1.05
16-Jul-97	Selenium	2.50	2.54	2.38-2.62
16-Jul-97	Zinc	1.00	1.05	.950-1.05

Method: EPA SW846, Test Methods for Evaluating Solid Wastes, third edition.



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

QA/QC SUMMARY

Sample: SLR & LS sludge samples, August 1997

Analysis performed by: Water Utilities Department Laboratory

Date reported: August 21, 1997

Recovery and replicate data

Date	Parameter	Spike	Acceptable	Percent	Relative	Acceptable
		Recovery	Range (%)	Difference	Range (%)	Range (%)
12-Aug-97	Arsenic	105	70-130	0.1	30	
12-Aug-97	Cadmium	98	70-130	5.8	30	
12-Aug-97	Chromium	100	70-130	4.9	30	
12-Aug-97	Copper	104	70-130	6.5	30	
11-Aug-97	Lead	109	70-130	5.8	30	
06-Aug-97	Mercury	103	70-130	16.8	30	
11-Aug-97	Molybdenum	111	70-130	2.6	30	
11-Aug-97	Nickel	123	70-130	1.3	30	
11-Aug-97	Selenium	109	70-130	4.2	30	
11-Aug-97	Zinc	119	70-130	0.8	30	

External reference standards

Date	Parameter	True Value	Reported Value	Acceptable Range
12-Aug-97	Arsenic	2.50	2.53	2.38-2.62
12-Aug-97	Cadmium	0.500	0.525	.475-.525
12-Aug-97	Chromium	1.00	1.04	.950-1.05
12-Aug-97	Copper	1.00	1.01	.950-1.05
11-Aug-97	Lead	1.00	0.990	.950-1.05
06-Aug-97	Mercury	3.00	2.98	2.34-3.68
11-Aug-97	Molybdenum	1.00	0.992	.950-1.05
11-Aug-97	Nickel	1.00	1.00	.950-1.05
11-Aug-97	Selenium	2.50	2.46	2.38-2.62
11-Aug-97	Zinc	1.00	1.03	.950-1.05

Method: EPA SW846, Test Methods for Evaluating Solid Wastes, third edition.

TREATED SEWAGE SLUDGE MONITORING

TYPE OF MONITORING: BACTERIOLOGICAL
 SAMPLING FREQUENCY: BIMONTHLY

Date reported: AUGUST 21, 1997

REQUIREMENT FOR CLASS B ALTERNATIVE I: DENSITY OF FECAL COLIFORM FROM SEVEN SAMPLES OF TREATED SEWAGE SLUDGE MUST NOT EXCEED 2 MILLION PER GRAM OF SEWAGE SLUDGE SOLIDS.

SAMPLE LOCATION	SAMPLE	# FECAL COLIFORM PER 100 ML	% TS	# FECAL COLIFORM /GM TS	LOG	SAMPLER	DATE	TIME	DIG. #
SAN LUIS REY	1	1300000	17.0	76471	4.8835	MACIAS	01-JUL-97	0200-0600	3
	2	1700000	16.9	100592	5.0026	MACIAS	16-JUL-97	0000-0600	1
PRESS CAKE	3	2400000	16.7	143713	5.1575	VALENTINE	22-23-JUL-97	2300-0300	1
	4	1700000	16.4	103659	5.0156	MACIAS	31-JUL-97	0000-0600	3
	5	700000	15.9	44025	4.6437	VALENTINE	05-06-AUG-97	2300-0300	3
	6	5000000	16.6	301205	5.4789	MACIAS	12-13-AUG-97	2330-0530	3
	7	170000	16.0	10625	4.0263	VALENTINE	19-20-AUG-97	2300-0300	3

LOG MEAN = 4.8869

GEOMETRIC MEAN = ANTILOG (4.8869) = 77072.6

MEETS CLASS B ALTERNATIVE I STANDARDS: YES

COMMENTS: NONE

METHOD: FECAL COLIFORM - DIRECT TEST BY MOST PROBABLE NUMBER (MPN), STND. MTHDS., 18TH ED., 9221 E.2
 %T.S. - STND. MTHDS., 17TH ED., 2540 B.

REPORT BY: M.L. PAPPAGIANIS

APPROVED BY: *M. Gonzalez*

XC: SAN LUIS REY WWTP, WATER UTILITIES ADMIN/G. PENNELL

SAN LUIS REY WASTEWATER TREATMENT PLANT - JULY 1997

REQUIREMENTS FOR VECTOR ATTRACTION REDUCTION - 503.33 (b) (1) - OPTION 1
REDUCTION IN VOLATILE SOLIDS CONTENT - AT LEAST 38% REDUCTION REQUIRED

MONT	RAW SLUDGE			DAF SLUDGE			DIGESTER FEED %VS	PRESS FEED %VS	VOL. SOLIDS REDUCTION
	%TS	%VS	FLOW	%TS	%VS	FLOW			
1	3.86	79.1	30660	4.66	74.1	20900	76.8	69.0	32.9
2	4.09	80.7	35649	4.46	76.2	29300	78.6	70.1	36.1
3									
4									
5									
6									
7	3.88	78.8	20074	4.84	77.1	29500	77.7	72.1	25.8
8	4.79	81.8	23511	3.49	75.0	31200	78.5	71.3	31.8
9	5.39	79.2	12749	5.15	76.1	31700	77.0	68.9	33.9
10	4.54	80.6	33618	4.24	74.3	28100	77.8	71.1	30.0
11	3.45	79.1	36528	4.45	73.6	33400	76.1	71.2	22.5
12									
13									
14	4.36	77.7	30732	2.93	77.2	33400	77.5	68.0	38.3
15	3.99	78.5	35642	4.37	75.2	31500	76.9		
16	4.12	77.0	32670	3.45	75.9	26200	76.6	66.7	38.7
17	2.84	77.1	34958	4.22	76.8	25900	76.9	69.1	33.0
18	4.50	77.7	43799	4.70	75.0	21600	76.8	69.2	32.1
19									
20									
21	4.82	80.1	23441	4.48	76.2	26300	78.1	72.2	27.2
22	3.42	78.5	27010	4.56	76.9	30300	77.5		
23	3.94	79.6	22923	3.72	77.6	33800	78.4	67.4	43.2
24	3.60	79.1	28569	4.27	78.3	32300	78.6	70.9	33.8
25	3.65	78.4	39534	4.10	77.6	32600	78.0	69.7	35.2
26									
27									
28	3.61	76.8	9957	3.55	79.4	33100	78.8	69.2	39.5
29	4.10	76.7	30470	3.83	77.6	38400	77.2	70.7	28.7
30	3.57	80.2	25214	3.29	79.0	38000	79.5	68.8	43.1
31	3.42	78.9	29655	3.47	79.2	39200	79.1	70.5	36.7
AVG	4.00	78.8	28922	4.11	76.6	30795	77.7	69.8	33.8

SAN LUIS REY WASTEWATER TREATMENT PLANT - AUGUST 1997

REQUIREMENTS FOR VECTOR ATTRACTION REDUCTION - 503.33 (b) (1) - OPTION 1
REDUCTION IN VOLATILE SOLIDS CONTENT - AT LEAST 38% REDUCTION REQUIRED

MONT	RAW SLUDGE			DAF SLUDGE			DIGESTER FEED %VS	PRESS FEED %VS	VOL. SOLIDS REDUCTION
	%TS	%VS	FLOW	%TS	%VS	FLOW			
1	3.97	79.4	23478	3.64	77.8	30400	78.5		
2									
3									
4	4.01	80.2	37628	4.44	78.4	47600	79.1	71.6	33.6
5	3.40	78.2	32810	4.18	76.3	36200	77.1	68.7	34.8
6	3.91	78.8	24637	4.33	76.6	41000	77.4	72.2	24.1
7	3.72	82.4	35572	4.04	75.6	33200	79.0	71.0	34.8
8									
9									
10									
11									
12	3.57	76.9	37314				76.9	68.2	35.6
13	2.77	78.0	33171	4.19	73.9	33100	75.5	68.6	29.2
14	3.50	77.9	37694	3.76	74.5	33300	76.2	69.4	29.3
15									
16									
17									
18	1.48	79.7	31488	3.79	77.1	33500	77.8	70.3	32.5
19	3.41	78.4	15261	3.14	76.6	28700	77.3	72.4	22.8
20	4.00	77.4	33723	4.17	76.1	34800	76.7	70.2	28.5
21	1.81	78.3	31430	3.60	75.9	28700	76.8	66.7	39.3
22									
23									
24									
25	3.20	78.7	38252	2.60	80.7	33100	79.5	69.5	41.3
26	4.38	78.0	11419	2.77	80.3	30500	79.4	68.5	43.7
27	2.90	77.9	33585	3.63	78.6	31200	78.3	70.1	34.9
28	2.74	78.0	36396	3.59	79.3	30800	78.7	69.9	37.1
29									
30									
Avg	3.30	78.6	30866	3.72	77.2	33740	77.8	69.8	33.9

AVERAGE % VOLATILE SOLIDS REDUCTION FOR JULY AND AUGUST = 33.9

NOTICE AND NECESSARY INFORMATION (NANI)

This form is to assist compliance with the bulk sewage sludge (biosolids) notification requirements [503.12(f)]. Please note, however, that if the biosolids meet the exceptional quality criteria, then the notification requirements do not apply. This form can be used by preparers of biosolids to transmit information to land applicators and also by land applicators to transmit information to land owners or lease holders.

Facility and Biosolids Type: San Luis Rey WWTP Dewatered Digested Sludge
Monitoring Period: From 09/01/97 To 10/31/97

To be Completed by PREPARERS of Biosolids

A. Please provide pollutant concentrations

Name	Concentration (mg/kg) Dry Weight	Pollutant Concentrations (Table 3, 40 CFR 503.13) (monthly average)	Ceiling Concentrations* (Table 1, 40 CFR 503.13) (daily maximum)
Arsenic	<14 mg/kg	41 mg/kg	75 mg/kg
Cadmium	5.4 mg/kg	39 mg/kg	85 mg/kg
Chromium	34 mg/kg	No Limit	No Limit
Copper	411 mg/kg	1500 mg/kg	4300 mg/kg
Lead	33 mg/kg	300 mg/kg	840 mg/kg
Mercury	1.7 mg/kg	17 mg/kg	57 mg/kg
Molybdenum	24 mg/kg	N/A**	75 mg/kg
Nickel	32 mg/kg	420 mg/kg	420 mg/kg
Selenium	18 mg/kg	100 mg/kg	100 mg/kg
Zinc	770 mg/kg	2800 mg/kg	7500 mg/kg
Nitrogen Concentration	Not Tested	N/A	N/A

* Biosolids may not be land applied if any pollutant exceeds these values.

** EPA has temporarily removed molybdenum limits from Table 3, Table 2 and Table 4.

B. Pathogen Reduction (40 CFR 503.32) -- Please indicate the level achieved

Class A Class B - 40 CFR 503.32 (b) (2) Alternative 1.

C. Vector Attraction Reduction (40 CFR 503.33) -- Please indicate the option performed **Option 1 requirement of at least 38% reduction was achieved as a two month average.**

<input checked="" type="checkbox"/> Option I	<input type="checkbox"/> Option 2	<input type="checkbox"/> Option 3	<input type="checkbox"/> Option 4
<input type="checkbox"/> Option 5	<input type="checkbox"/> Option 6	<input type="checkbox"/> Option 7	<input type="checkbox"/> Option 8
<input type="checkbox"/> No vector attraction reduction options were performed			

D. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or these persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name and Official Title (<i>type or print</i>)	Guss Pennell, Environmental Regulatory Compliance Officer	B. Area Code and Telephone Number	760-966-8795 & 760-966-4874 (FAX)
C. Signature			
	D. Date Signed		
	January 2, 1997		



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

LABORATORY REPORT

Sample:	sludge cake -- total solids = 16.9 %			
Identification:	San Luis Rey WWTP; 12 discrete samples composited in lab			
Samples received:	9-Sep-97			
Analysis performed by:	City of Oceanside, Water Utilities Department Laboratory			
Date reported:	29-Oct-97			
Analyte	Method	Results (mg/kg) dry weight	Limits - 40 CFR 503	
			Pollutant concentrations (monthly ave)	Ceiling concentrations (daily max)

Arsenic	6010	ND <14	41 mg/kg	75 mg/kg
Cadmium	6010	5.92	39 mg/kg	85 mg/kg
Chromium	6010	36.2	no limit	no limit
Copper	6010	420	1500 mg/kg	4300 mg/kg
Lead	6010	35.2	300 mg/kg	840 mg/kg
Mercury	7471	1.86	17 mg/kg	57 mg/kg
Molybdenum	6010	27.0	N/A	75 mg/kg
Nickel	6010	32.4	420 mg/kg	420 mg/kg
Selenium	6010	20	100 mg/kg	100 mg/kg
Zinc	6010	837	2800 mg/kg	7500 mg/kg

Methods: EPA SW846, Test Methods for Evaluating Solid Wastes, Third edition.

WATER UTILITIES DEPARTMENT LABORATORY, by:

Mary Gonzales
Laboratory Supervisor



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

LABORATORY REPORT

Sample:	sludge cake -- total solids = 17.2 %			
Identification:	San Luis Rey WWTP; 12 discrete samples composited in lab			
Samples received:	02-Oct-97			
Analysis performed by:	City of Oceanside, Water Utilities Department Laboratory			
Date reported:	08-Dec-97			
Analyte	Method	Results (mg/kg) dry weight	Limits - 40 CFR 503	
			Pollutant concentrations (monthly ave)	Ceiling concentrations (daily max)

Arsenic	6010	ND <14	41 mg/kg	75 mg/kg
Cadmium	6010	4.92	39 mg/kg	85 mg/kg
Chromium	6010	31.4	no limit	no limit
Copper	6010	402	1500 mg/kg	4300 mg/kg
Lead	6010	31.6	300 mg/kg	840 mg/kg
Mercury	7471	1.62	17 mg/kg	57 mg/kg
Molybdenum	6010	21.4	N/A	75 mg/kg
Nickel	6010	30.8	420 mg/kg	420 mg/kg
Selenium	6010	ND <16	100 mg/kg	100 mg/kg
Zinc	6010	704	2800 mg/kg	7500 mg/kg

Methods: EPA SW846, Test Methods for Evaluating Solid Wastes, Third edition.

WATER UTILITIES DEPARTMENT LABORATORY, by:

Mary Gonzales
Laboratory Supervisor



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

QA/QC SUMMARY

Sample: sludge samples, September 8/9, 1997

Analysis performed by: City of Oceanside, Water Utilities Department Laboratory

Date reported: 30-Oct-97

Recovery and replicate data

Date	Parameter	Spike Recovery	Acceptable Range (%)	Relative percent Difference	Acceptable Range (%)
1-Oct-97	Arsenic	98	70-130	2.6	30
1-Oct-97	Cadmium	92	70-130	1.7	30
1-Oct-97	Chromium	90.00	70-130	0.9	30
1-Oct-97	Copper	101	70-130	1.2	30
1-Oct-97	Lead	97	70-130	7.0	30
25-Sep-97	Mercury	83	70-130	23.4	30
1-Oct-97	Molybdenum	87	70-130	4.2	30
1-Oct-97	Nickel	100	70-130	8.7	30
1-Oct-97	Selenium	92	70-130	0.09	30
1-Oct-97	Zinc	117	70-130	2.6	30

External reference standards

Date	Parameter	True value	Reported value	Acceptable range
1-Oct-97	Arsenic	2.50	2.49	2.38-2.62
1-Oct-97	Cadmium	0.500	0.517	0.475-0.525
1-Oct-97	Chromium	1.00	1.02	0.950-1.05
1-Oct-97	Copper	1.00	1.02	0.950-1.05
1-Oct-97	Lead	1.00	1.03	0.950-1.05
25-Sep-97	Mercury	3.00	2.92	2.70-3.30
1-Oct-97	Molybdenum	1.00	0.993	0.950-1.05
1-Oct-97	Nickel	1.00	1.03	0.950-1.05
1-Oct-97	Selenium	2.50	2.58	2.38-2.62
1-Oct-97	Zinc	1.00	1.05	0.950-1.05

Methods: EPA SW846, Test Methods for Evaluating Solid Wastes, Third edition.



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

QA/QC SUMMARY

Sample: sludge samples, October 2/6, 1997

Analysis performed by: City of Oceanside, Water Utilities Department Laboratory

Date reported: 08-Dec-97

Recovery and replicate data

Date	Parameter	Spike Recovery	Acceptable Range (%)	Relative percent Difference	Acceptable Range (%)
14-Oct-97	Arsenic	97	70-130	0.5	30
14-Oct-97	Cadmium	95	70-130	6.7	30
14-Oct-97	Chromium	92	70-130	5.4	30
14-Oct-97	Copper	117	70-130	2.2	30
14-Oct-97	Lead	104	70-130	0.8	30
08-Oct-97	Mercury	77	70-130	18.3	30
14-Oct-97	Molybdenum	85	70-130	1.8	30
14-Oct-97	Nickel	101	70-130	5.4	30
14-Oct-97	Selenium	97	70-130	7.2	30
14-Oct-97	Zinc	103	70-130	1.0	30

External reference standards

Date	Parameter	True value	Reported value	Acceptable range
14-Oct-97	Arsenic	2.50	2.53	2.38-2.62
14-Oct-97	Cadmium	0.500	0.523	0.475-0.525
14-Oct-97	Chromium	1.00	0.99	0.950-1.05
14-Oct-97	Copper	1.00	1.03	0.950-1.05
14-Oct-97	Lead	1.00	1.00	0.950-1.05
08-Oct-97	Mercury	3.00	2.96	2.70-3.30
14-Oct-97	Molybdenum	1.00	0.961	0.950-1.05
14-Oct-97	Nickel	1.00	1.05	0.950-1.05
14-Oct-97	Selenium	2.50	2.60	2.38-2.62
14-Oct-97	Zinc	1.00	1.03	0.950-1.05

Methods: EPA SW846, Test Methods for Evaluating Solid Wastes, Third edition.



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

TREATED SEWAGE SLUDGE MONITORING

Type of monitoring: Bacteriological

Sampling frequency: bimonthly

Requirement for class B alternative I: Density of fecal coliform from seven samples of treated sewage sludge must not exceed 2 million per gram of sewage sludge solids.

Sample location	Sample	# fecal coliform per 100 ml	% TS	# fecal coliform per gm TS	log	date sampled	time sampled	dig #
San Luis Rey press cake	1	900,000	16.3	55,215	4.7421	02/03-Sep-97	2300-0300	3
	2	5,000,000	17.1	292,398	5.4660	10-Sep-97	0000-0600	3
	3	300,000	15.3	19,608	4.2924	24-Sep-97	0000-0400	3
	4	240,000	17.4	13,793	4.1397	01-Oct-97	0000-0400	3
	5	130,000	17.2	7,558	3.8784	08-Oct-97	0000-0400	3
	6	140,000	16.0	8,750	3.9420	21/22-Oct-97	2300-0300	1
	7	800,000	17.2	46,512	4.6676	28/29-Oct-97	2330-0330	1

$$\text{geometric mean} = \text{antilog}(4.4469) = 27,983$$

meets class B alternative I standards: Yes

Method: Standard Methods for the Examination of Water and Wastewater, 18th edition.

fecal coliform - direct test by most probable number (MPN), 9221 E.2.

% TS - 2540 B.

WATER UTILITIES DEPARTMENT LABORATORY, by:

Mary Gonzales
Laboratory Supervisor

SAN LUIS REY WASTEWATER TREATMENT PLANT - SEPTEMBER 1997

REQUIREMENTS FOR VECTOR ATTRACTION REDUCTION - 503.33 (b) (1) - OPTION 1
 REDUCTION IN VOLATILE SOLIDS CONTENT - AT LEAST 38% REDUCTION REQUIRED

MONT	RAW SLUDGE			DAF SLUDGE			DIGESTER	PRESS	VOL. SOLIDS REDUCTION
	%TS	%VS	FLOW	%TS	%VS	FLOW	FEED %VS	FEED %VS	
1	3.97	79.4	23478	3.64	77.8	30400	78.5	67.7	42.7
2	2.98	76.7	48950	4.16	80.8	32100	78.7	70.6	34.9
3	3.55	78.7	40089	3.96	80.9	30300	79.7	70.6	38.9
4	3.58	77.9	36603	3.90	81.5	31600	79.6	69.0	43.1
5									
6									
7									
8	3.11	78.7	29958	2.17	77.2	35300	78.0	70.1	34.0
9	3.50	78.5	22919	3.38	76.7	36300	77.4	69.1	34.7
10	3.10	78.7	24690	3.59	79.1	38300	79.0	68.6	41.8
11	3.25	78.0	34255	2.92	82.0	30600	79.8	70.1	40.6
12									
13									
14									
15	2.40	79.4	20897	4.08	82.0	32600	81.3	72.1	40.5
16	3.00	79.4	28946				79.4		
17	3.43	81.1	32849	3.87	80.4	35600	80.7	71.0	41.5
18	3.37	78.0	32460	2.73	80.0	35600	78.9	71.6	32.7
19									
20									
21									
22	3.09	78.7	30430	2.66	81.5	38300	80.2	71.2	38.8
23	3.49	80.4	30133	3.90	79.8	38300	80.0	70.6	40.1
24	3.42	78.8	30490	2.66	81.5	35400	80.1	70.8	39.7
25	3.41	78.2	29050	3.16	79.8	35400	79.0		
26									
27									
28									
29	3.24	78.6	26106	3.87	80.6	36500	79.9	71.4	37.0
30									
AVG	3.29	78.8	30724	3.42	80.1	34538	79.4	70.3	38.7

SAN LUIS REY WASTEWATER TREATMENT PLANT - OCTOBER 1997

REQUIREMENTS FOR VECTOR ATTRACTION REDUCTION - 503.33 (b) (1) - OPTION 1
REDUCTION IN VOLATILE SOLIDS CONTENT - AT LEAST 38% REDUCTION REQUIRED

MONT	RAW SLUDGE			DAF SLUDGE			DIGESTER FEED %VS	PRESS FEED %VS	VOL. SOLIDS REDUCTION
	%TS	%VS	FLOW	%TS	%VS	FLOW			
1	3.24	80.0	34378	3.55	81.1	36600	80.6	72.2	37.5
2	4.04	76.6	39498	3.84	78.4	36500	77.4	71.9	25.5
3									
4									
5									
6	2.91	74.0	39423	3.78	81.1	30400	77.6	69.7	33.4
7	2.51	78.7	34673	3.82	79.8	31500	79.3	71.2	35.6
8	3.56	78.9	39207	3.50	79.1	29100	79.0	71.4	33.6
9	3.46	78.7	42972	3.88	78.9	28800	78.8	72.3	29.7
10									
11									
12									
13	3.93	78.2	48956	3.60	80.9	31400	79.2	71.9	32.8
14	3.92	77.2	36577	3.10	80.5	30500	78.5	69.0	39.1
15	3.66	78.2	36347	3.87	79.6	30500	78.9	68.9	40.6
16	3.56	78.0	41818	4.03	78.6	29900	78.3	72.5	26.8
17									
18									
19									
20	3.51	76.2	32564	3.28	79.2	32500	77.6	67.7	39.7
21	3.49	78.1	34656	3.91	80.5	29900	79.3	70.1	38.7
22	3.44	79.2	40532	4.12	80.6	30000	79.9	69.8	41.7
23	3.38	78.2	42712	3.39	81.1	30100	79.4	69.0	42.3
24									
25									
26									
27	3.25	77.7	47431	3.62	80.2	31600	78.8	67.8	43.2
28	3.28	79.5	46758	3.67	81.1	28800	80.2	72.3	35.4
29	3.14	80.2	49098	3.80	80.6	27900	80.4	70.3	42.2
30	3.28	79.2	49011	3.56	78.3	32200	78.8	68.9	40.5
31									
AVG	3.42	78.2	40923	3.68	80.0	31011	79.0	70.4	36.8

AVERAGE % VOLATILE SOLIDS REDUCTION FOR SEPTEMBER AND OCTOBER = 38

NOTICE AND NECESSARY INFORMATION (NANI)

This form is to assist compliance with the bulk sewage sludge (biosolids) notification requirements [503.12(f)]. Please note, however, that if the biosolids meet the exceptional quality criteria, then the notification requirements do not apply. This form can be used by preparers of biosolids to transmit information to land applicators and also by land applicators to transmit information to land owners or lease holders.

Facility and Biosolids Type: San Luis Rey WWTP Dewatered Digested Sludge
Monitoring Period: From 11/01/97 To 12/31/97

To be Completed by PREPARERS of Biosolids

A. Please provide pollutant concentrations

Name	Concentration (mg/kg) Dry Weight	Pollutant Concentrations (Table 3, 40 CFR 503.13) (monthly average)	Ceiling Concentrations* (Table 1, 40 CFR 503.13) (daily maximum)
Arsenic	<14 mg/kg	41 mg/kg	75 mg/kg
Cadmium	6.1 mg/kg	39 mg/kg	85 mg/kg
Chromium	33 mg/kg	No Limit	No Limit
Copper	424 mg/kg	1500 mg/kg	4300 mg/kg
Lead	34 mg/kg	300 mg/kg	840 mg/kg
Mercury	2.0 mg/kg	17 mg/kg	57 mg/kg
Molybdenum	26 mg/kg	N/A**	75 mg/kg
Nickel	53 mg/kg	420 mg/kg	420 mg/kg
Selenium	19 mg/kg	100 mg/kg	100 mg/kg
Zinc	830 mg/kg	2800 mg/kg	7500 mg/kg
Nitrogen Concentration	Not Tested	N/A	N/A

* Biosolids may not be land applied if any pollutant exceeds these values.

** EPA has temporarily removed molybdenum limits from Table 3, Table2 and Table 4.

B. Pathogen Reduction (40 CFR 503.32) -- Please indicate the level achieved

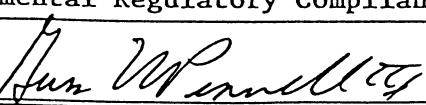
Class A Class B – 40 CFR 503.32 (b) (2) Alternative 1.

C. Vector Attraction Reduction (40 CFR 503.33) -- Please indicate the option performed

<input checked="" type="checkbox"/> Option I	<input type="checkbox"/> Option 2	<input type="checkbox"/> Option 3	<input type="checkbox"/> Option 4
<input type="checkbox"/> Option 5	<input type="checkbox"/> Option 6	<input type="checkbox"/> Option 7	<input type="checkbox"/> Option 8
<input type="checkbox"/> No vector attraction reduction options were performed			

D. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or these persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name and Official Title (<i>type or print</i>)	Guss Pennell, Environmental Regulatory Compliance Officer	B. Area Code and Telephone Number
		760-966-8795 & 760-966-4874 (FAX)
C. Signature	D. Date Signed	
	January 15, 1998	



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

LABORATORY REPORT

Sample:	sludge cake -- total solids = 16.7 %			
Identification:	San Luis Rey WWTP; 12 discrete samples composited in lab			
Samples received:	04-Nov-97			
Analysis performed by:	City of Oceanside, Water Utilities Department Laboratory			
Date reported:	31-Dec-97			
Analyte	Method	Results (mg/kg) dry weight	Limits - 40 CFR 503	
			Pollutant concentrations (monthly ave)	Ceiling concentrations (daily max)

Arsenic 6010 ND <14 41 mg/kg 75 mg/kg

Cadmium 6010 5.46 39 mg/kg 85 mg/kg

Chromium 6010 31.3 no limit no limit

Copper 6010 430 1500 mg/kg 4300 mg/kg

Lead 6010 36.6 300 mg/kg 840 mg/kg

Mercury 7471 1.96 17 mg/kg 57 mg/kg

Molybdenum 6010 27.2 N/A 75 mg/kg

Nickel 6010 60.0 420 mg/kg 420 mg/kg

Selenium 6010 18 100 mg/kg 100 mg/kg

Zinc 6010 817 2800 mg/kg 7500 mg/kg

Methods: EPA SW846, Test Methods for Evaluating Solid Wastes, Third edition.

WATER UTILITIES DEPARTMENT LABORATORY, by:

Mary Gonzales

Laboratory Supervisor



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

LABORATORY REPORT

Sample:	sludge cake -- total solids = 16.8 %		
Identification:	San Luis Rey WWTP; 12 discrete samples composited in lab		
Samples received:	01-Dec-97		
Analysis performed by:	City of Oceanside, Water Utilities Department Laboratory		
Date reported:	31-Dec-97		

Analyte	Method	Results (mg/kg) dry weight	Limits - 40 CFR 503	
			Pollutant concentrations (monthly ave)	Ceiling concentrations (daily max)
Arsenic	6010	ND <14	41 mg/kg	75 mg/kg
Cadmium	6010	6.71	39 mg/kg	85 mg/kg
Chromium	6010	33.7	no limit	no limit
Copper	6010	418	1500 mg/kg	4300 mg/kg
Lead	6010	31.8	300 mg/kg	840 mg/kg
Mercury	7471	1.96	17 mg/kg	57 mg/kg
Molybdenum	6010	23.9	N/A	75 mg/kg
Nickel	6010	45.0	420 mg/kg	420 mg/kg
Selenium	6010	20	100 mg/kg	100 mg/kg
Zinc	6010	843	2800 mg/kg	7500 mg/kg

Methods: EPA SW846, Test Methods for Evaluating Solid Wastes, Third edition.

WATER UTILITIES DEPARTMENT LABORATORY, by:

Mary Gonzales
Laboratory Supervisor



CITY OF OCEANSIDE

WATER UTILITIES DEPARTMENT LABORATORY

TREATED SEWAGE SLUDGE MONITORING

Type of monitoring: Bacteriological

Sampling frequency: bimonthly

Requirement for class B alternative I: Density of fecal coliform from seven samples of treated sewage sludge must not exceed 2 million per gram of sewage sludge solids.

Sample location	Sample	# fecal coliform per 100 ml	% TS	# fecal coliform per gm TS	log	date sampled	time sampled	dig #
San Luis Rey press cake	1	800,000	18.7	42,781	4.6313	05/06-Nov-97	2330-0330	3
	2	240,000	19.5	12,308	4.0902	11/12-Nov-97	2330-0330	3
	3	700,000	16.5	36,082	4.5573	18/19-Nov-97	2300-0300	3
	4	500,000	18.0	27,778	4.4437	24/25-Nov-97	2300-0300	3
	5	300,000	16.8	17,857	4.2518	01-Dec-97	0000-0400	3
	6	300,000	16.9	17,752	4.2492	02/03-Dec-97	2300-0300	3
	7	80,000	17.3	4,624	3.6650	29/30-Dec-97	2345-0540	3

$$\begin{array}{ll} \text{log mean} = & 4.2698 \\ \text{geometric mean} = & \text{antilog (4.2698)} = 18,612 \end{array}$$

meets class B alternative I standards: Yes

Method: Standard Methods for the Examination of Water and Wastewater, 18th edition.

fecal coliform - direct test by most probable number (MPN), 9221 E.2.

% TS - 2540 B.

WATER UTILITIES DEPARTMENT LABORATORY, by:

Mary Gonzales
Laboratory Supervisor

SAN LUIS REY WASTEWATER TREATMENT PLANT - NOVEMBER 1997

REQUIREMENTS FOR VECTOR ATTRACTION REDUCTION - 503.33 (b) (1) - OPTION 1
REDUCTION IN VOLATILE SOLIDS CONTENT - AT LEAST 38% REDUCTION REQUIRED

MONT	RAW SLUDGE			DAF SLUDGE			DIGESTER FEED %VS	PRESS FEED %VS	VOL. SOLIDS REDUCTION
	%TS	%VS	FLOW	%TS	%VS	FLOW			
1									
2									
3	3.66	74.4	40465	3.12	80.4	34800	76.9	65.8	42.3
4	4.48	74.6	42187	3.80	80.8	41700	77.4	68.4	36.9
5	4.23	76.6	48933	3.10	79.8	33800	77.7	71.4	28.2
6	4.25	78.3	49037	3.78	79.6	38200	78.8	72.0	31.0
7									
8									
9									
10	4.12	79.4	49623	4.24	77.2	27800	78.6	67.9	42.4
11	4.04	78.8	48375	4.23	77.3	26700	78.3	66.3	45.3
12	4.08	80.3	47334	4.08	80.0	27100	80.2	68.3	46.8
13	3.77	78.0	35386	4.44	79.8	26900	78.9	65.3	49.5
14									
15									
16									
17	3.44	80.0	48624	3.67	79.3	26000	79.7	66.3	50.0
18	3.36	80.2	44660	3.75	80.5	29400	80.3	67.9	48.2
19	3.48	80.5	47626	3.69	80.2	30600	80.4	67.6	49.1
20	3.51	80.6	42791	3.88	79.8	32300	80.2	68.2	47.2
21									
22									
23									
24	3.91	79.0	46878	4.22	80.2	29700	79.5	69.2	42.0
25	4.17	79.2	38555	3.82	79.3	31100	79.2	69.1	41.4
26	3.96	80.6	49595	3.70	79.8	30100	80.3	70.0	42.7
27									
28									
29									
30									-
Avg	3.90	78.7	45338	3.83	79.6	31080	79.1	68.2	43.2